REMARKS

I. INTRODUCTION

In response to the Office Action dated January 4, 2006, please consider the following remarks.

II. STATUS OF CLAIMS

Claims 1-32 and 45-52 are pending in the application.

Claims 1-6, 9, 15-21, 24-30, and 45-49 were rejected under 35 U.S.C. §102(e) as being anticipated in view of U.S. Patent No. 6,198,9074 to Torkington et al, and these rejections are being appealed.

Claims 7, 22, and 31 were rejected under 35 U.S.C. §103(a) as being unpatentable over Torkington, in view of U.S. Patent No. 6,564,053 to Briskman et al., and these rejections are being appealed.

Claims 10, 11, and 50-52 are rejected under 35 U.S.C. §103(a) as being unpatentable over Torkington, in view of U.S. Patent No. 6,778,810 to Anderson, and these rejections are being appealed.

III. SUMMARY OF CLAIMED SUBJECT MATTER

Briefly, Appellant's invention, as substantially recited in independent claims 1, 16, and 24. is described as a system that provides at least near continuous broadcast service to a terrestrial receiver, thus augmenting a legacy satellite constellation in a geostationary orbit. In one embodiment, the system comprises a plurality of satellites (202A-202C) in an inclined, elliptical, geosynchronous orbit. The plurality of satellites (202A,-202C) arguments at least one legacy satellite (204) in a geostationary orbit. These features are illustrated in FIG. 2 and described in the specification as follows:

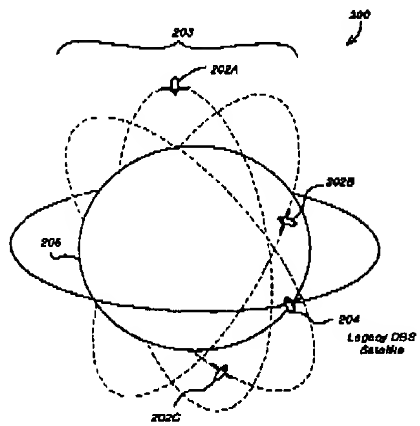


FIG. 2 is a diagram showing one embodiment of a satellite constellation of an enhanced video distribution system 200 using the principles of the present invention. The enhanced video distribution system comprises one or more legacy satellites 108 in a geostationary orbit around the Earth 206, and an augmenting satellite constellation 203 of three or more satellites 202A-202C (hereinafter alternatively referred to as satellite(s) 202) which are in inclined, substantially elliptical, geo-synchronous orbits with objective service at or near the center of CONUS.

In an embodiment substantially recited in independent claims 7, 22, and 31, the satellites 202A-202C provide a portion of the time of the at least near continuous broadcast service to the terrestrial receiver, and the inclined, elliptical, geosynchronous orbit is characterized by an orbital inclination of about 50 degrees and an orbital inclination of about 0.13.

In another embodiment substantially recited in independent claim 12, the system is described by a receiver station (132) for receiving at least near continuous broadcast service from a plurality of satellites (202A-202C). The receiver station (132) (illustrated in FIG. 1) includes an antenna 112 having a sensitivity characteristic (illustrated in FIG. 4) substantially corresponding to the apparent position of each of the satellites (202A-202C), as shown in FIG. 4 and in the discussion appurtenant thereto (page 7, line 13, et seq.).

In another embodiment substantially recited in independent claim 45, the satellite system is described by at least one satellite in a geostationary orbit (204, and illustrated in FIG. 2), a plurality of satellites, each in an inclined, elliptical geosynchronous orbit (202A-202C), also illustrated in FIG. 2), a

receiver station antenna 112 that can communicate with said at least one satellite (204) and at least one of said plurality of satellites (202A-202C) during an active period without tracking, and a gateway (104) having a tracking antenna (106) to track said plurality of satellites (202A-202C). This embodiment is described in FIGs. 1, 2, 4, and 6 and the discussion appurtenant thereto.

Finally, in another embodiment substantially recited in independent claim 50, the satellite system is described by at least one satellite (204) in a geostationary orbit, an augmenting constellation (203) of satellites (202A-202C) in non-geostationary orbit, and a receiver station (132) having a relatively high gain, fixed antenna (112) capable of communication with said at least one satellite (204) in a geostationary orbit and an active one of said augmenting constellation of satellites (203). In this embodiment, a track of an apparent position of each satellite of the augmenting constellation of satellites relative to said antenna when said satellite is in an active period is substantially closed loop.

IV. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1-6, 9, 15-21, 24-30, and 45-49 are patentable under 35 U.S.C. § 102(e) over U.S. Patent No. 6,198,907, issued to Torkington et al. (hereinafter, the Torkington reference).

Whether claims 7, 22, and 31 are patentable under 35 U.S.C. § 103(a) over Torkington, in view of U.S. Patent No. 6,564,053, issued to Briskman et al. (hereinafter, the Briskman reference).

Whether claims 10, 11, and 50-52 are patentable under 35 U.S.C. § 103(a) over Torkington, in view of U.S. Patent No. 6,778,810, issued to Anderson.

V. GROUPING OF CLAIMS

The rejected claims do not stand or fall together. Each claim is independently patentable. Separate arguments for the patentability of each claim are provided below.

VI. ARGUMENTS

A. The Independent Claims Are Patentable Over The Prior Art

1. The Torkington Reference

U.S. Patent No. 6,198,907, issued to Torkington et al. (hereinafter the Torkington reference) discloses a satellite communication system using satellites in a zero-drift constellation. A zero-drift

constellation (200 FIG. 2) is used to simplify the tracking and hand-off requirements of terrestrial-based user terminals (110 FIG. 1). Each satellite (120 FIG. 1) traces out a common ground track which has a number of southbound segments and an equal number of adjacent northbound segments. This allows user terminals (110) to employ antennas with only one degree of freedom to track satellites (120) in zero-drift constellation (200). User terminals (110) perform hand-offs with satellites (120) that are within a limited field of view with respect to user terminal (110). User terminal (110) tracks a first satellite until a crossover point is reached and then performs a hand-off to a second satellite traveling in the opposite direction along an adjacent segment. User terminal (110) tracks the second satellite until another crossover point is reached and then performs a hand-off to a third satellite traveling in the same direction as the first satellite along an adjacent segment.

2. The Briskman Reference

U.S. Patent No. 6,564,053, issued to Briskman et al. (hereinafter the Briskman reference) discloses an efficient high latitude service area satellite mobile broadcasting systems. The satellite audio broadcasting systems include orbital constellations for providing high elevation angle coverage of audio broadcast signals from the constellation's satellites to fixed and mobile receivers within service areas located at geographical latitudes well removed from the equator.

3. The Anderson Reference

U.S. Patent No. 6,778,810, issued to Anderson discloses a method and apparatus for mitigating interference from terrestrial broadcasts sharing the same channel with satellite broadcasts using an antenna with posterior sidelobes. An apparatus for simultaneously receiving a first signal from a non-terrestrial source and a second signal from a terrestrial source on the same or overlapping channels using a receive antenna with posteriorly-directed sidelobes is disclosed. The apparatus comprises at least one terrestrial transmitter transmitting information on at least one frequency simultaneously usable by at least one satellite transmitting to a satellite receive antenna having a sensitivity characterizable by a primary sensitive axis directed substantially at satellite. The terrestrial transmitter includes an azimuthal gain characteristic directed substantially away from the Earth's Equator. In an alternative embodiment, the terrestrial transmitter is disposed at a location

defining a vector angularly displaced from the primary sensitive axis by an angle of less than 90 degrees. A method of transmitting information is also disclosed. In this method the information is transmitted on at least one frequency simultaneously usable by at least one satellite transmitting to a satellite receive antenna having a sensitivity characterizable by a primary sensitive axis directed substantially at the satellite and a posterior secondary sensitive axis. The method is performed by transmitting the information from a terrestrially-based transmitter to a terrestrial receive antenna in a direction substantially away from the Equator.

B. Claims 1-6, 9, 15-21, 24-30, and 45-49 are patentable under 35 U.S.C. § 102(e) over Torkington

With Respect to Claims 1, 16, and 24: Claim 1 recites:

> *A system for providing at least near continuous broadcast service to a terrestrial receiver, comprising:*
> *a plurality of satellites, each satellite in an inclined, elliptical, geosynchronous orbit, each satellite providing a portion of time of the at least near continuous broadcast service to the terrestrial receiver,*
> *wherein the plurality of satellites augments at least one legacy satellite in a geostationary orbit.*

According to the First Office Action, the plurality of satellites, each in an inclined, elliptical, geosynchronous orbit and providing a portion of the time of the at least near continuous broadcast service to a terrestrial receiver was disclosed as follows:

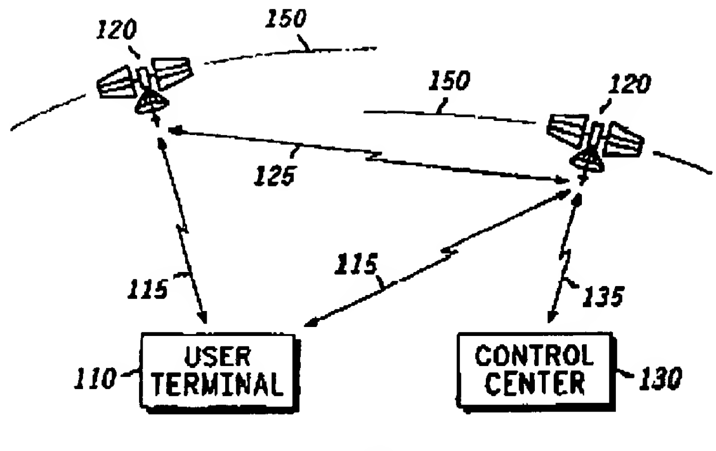
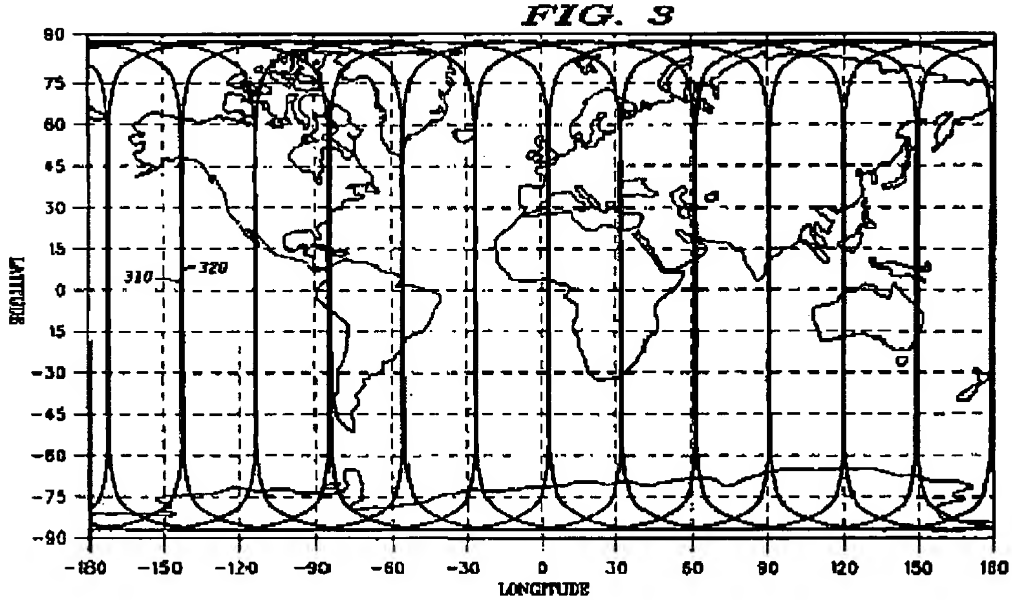


FIG. 1

FIG. 3



As is well known by those skilled in the art, orbital parameters are used to describe a satellite's orbit and a constellation's configuration. The inclination (i) is a constant defining the angle at which the orbital plane intersects the equator. In addition, the Right Ascension of the Ascending Node (RAAN) defines an angle between a non-rotating celestial reference and the line of nodes. The line of nodes is defined by a line formed using the intersection of an orbital plane and the plane of the equator. The line of nodes provides an orbit orientation.

FIG. 1 shows a general view of a satellite communications system in accordance with a preferred embodiment of the invention. Communications system 100 comprises at least one user terminal 110, a plurality of satellites

120, and at least one control center 130. Generally, communications system 100 can be viewed as a network of nodes. All nodes of communications system 100 are or can be in data communication with other nodes of communications system 100 through communication links (115, 125, and 135). In addition, all nodes of communications system 100 are or can be in data communication with other devices dispersed throughout the world through satellite or terrestrial networks and/or other conventional terrestrial devices coupled to communications system 100 through user terminals 110.

The invention is applicable to satellites that use single or multiple beams pointed towards the earth, and preferably, to satellites that move beams across the surface of the earth along a common ground track. The invention is also applicable to systems where full coverage of the earth is not achieved.

The invention is particularly applicable to satellite communications systems which use low cost user terminals with simple tracking capabilities. The invention provides satellites with synchronized orbits which allow user terminals located at fixed points to have fixed fields of view. Typically, these fields of view require only a single degree of steering freedom and can be defined by a one-dimensional angle such as elevation.

Constellations can be distinguished, for example, by the number of satellites and/or the altitude at which the satellites are positioned. In a zero-drift orbit, a satellite completes a specific number of revolutions in a particular amount of time. In this case, a satellite's altitude is determined by the number of revolutions it makes within a particular amount of time. For example, a satellite's altitude can be restricted to be below the first Van Allen radiation belt. In addition, a satellite's altitude can be determined by the size of a satellite's antenna footprint and the number of satellites in a constellation.

In a preferred embodiment of the invention, satellite communications system 100 comprises a plurality of LEO satellites in a zero-drift constellation. In this case, each satellite is in a resonant zero-drift circular orbit which repeats after a specific number of revolutions of the earth. This means that each satellite in the constellation traces out a substantially repeating ground track after this specific number of revolutions.

In a preferred embodiment, a satellite's position with respect to other satellites 120 within a zero-drift constellation is determined by phasing satellites 120 with respect to each other. In this case, satellite phasing is substantially equal, and this leads to satellites 120 having relatively even spacing within the zero-drift constellation. For example, the phasing between satellites 120 can be determined using a specific number of revolutions and the number of satellites being used in the zero-drift constellation. (col. 2, line 40 through col. 3, line 40)

In a preferred embodiment, processor 630 controls the formation of links 115 (FIG. 1) by, among other things, determining link setup, determining when each satellite will be within the user terminal's FOV, and calculating at least one pointing angle for controllable antenna 650. In addition, processor 630 sends control information to controller 660 so that links can be established at the appropriate times, and it sends control information to controller 660 so that links can be handed-off at the appropriate times. Control signals are transferred between controller 660 and processor 630.

In a preferred embodiment, controllable antenna 650 includes a set of relatively simple tracking elements which are controlled by controller 660. Because satellites in a zero-drift constellation follow a constant ground track, user terminal tracking is only required to have one degree of freedom. For example, a small dish antenna could be used along with a small motor drive that moves the small dish antenna along an arc that the satellites travel along.

In alternate embodiments, controllable antenna 650 includes elements (not shown in FIG. 6) preferably arranged in a two-dimensional array. However, other array configurations are suitable. In these alternate embodiments, controllable antenna 650 can comprise a plurality of array elements which are independently controlled to produce a desired phase relationship to steer one or more antenna beams in any direction over a

one-dimensional angular field of view (i.e., one degree of steering freedom). In other alternate embodiments, multi-dimensional fields of view are used. (col. 7, lines 31-59)

The Applicant respectfully disagreed, because Torkington discloses satellites deployed in a low-earth orbit (LEO), not a geosynchronous orbit.

The Final Office Action argues that the following portions of Torkington disclose *a plurality of satellites, each satellite in an inclined, elliptical, geosynchronous orbit, each satellite providing a portion of time of the at least near continuous broadcast service to the terrestrial receiver.*

200 FIG. 2

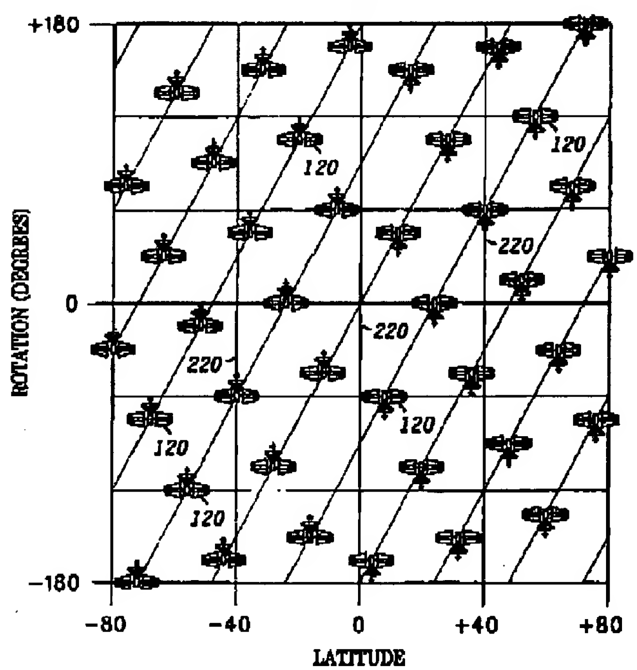
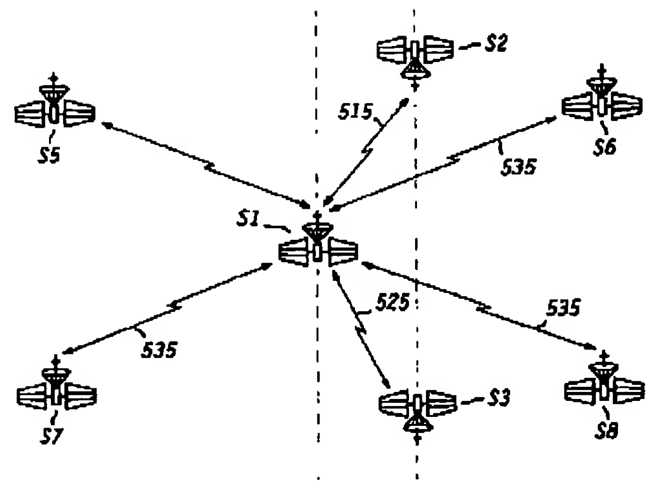


FIG. 5



Constellations have been proposed which use a variety of different orbital parameters. A "satellite" is defined herein to mean a man-made object or vehicle intended to orbit the earth, and the term can include both geostationary and non-geostationary satellites. A "constellation" is defined herein to mean an ensemble of satellites arranged in orbits for providing specified coverage of a portion or of all portions of the earth. A constellation typically includes multiple rings (or planes) of satellites, and it can have equal numbers of satellites in each plane, although this is not essential. A constellation could include geostationary or non-geostationary satellites, or a combination of both.

As is well known by those skilled in the art, orbital parameters are used to describe a satellite's orbit and a constellation's configuration. The inclination (i) is a constant defining the angle at which the orbital plane intersects the equator. In addition, the Right Ascension of the Ascending Node (RAAN) defines an angle between a non-rotating celestial reference and the line of nodes. The line of nodes is defined by a line formed using the intersection of an orbital plane and the plane of the equator. The line of nodes provides an orbit orientation.

FIG. 1 shows a general view of a satellite communications system in accordance with a preferred embodiment of the invention. Communications system 100 comprises at least one user terminal 110, a plurality of satellites 120, and at least one control center 130. Generally, communications system 100 can be viewed as a network of nodes. All nodes of communications system 100 are or can be in data communication with other nodes of communications system 100 through communication links (115, 125, and 135). In addition, all nodes of communications system 100 are or can be in data communication with other devices dispersed throughout the world through satellite or terrestrial networks and/or other conventional terrestrial devices coupled to communications system 100 through user terminals 110.

The invention is applicable to satellites that use single or multiple beams pointed towards the earth, and preferably, to satellites that move beams across the surface of the earth along a common ground track. The invention is also applicable to systems where full coverage of the earth is not achieved.

The invention is particularly applicable to satellite communications systems which use low cost user terminals with simple tracking capabilities. The invention provides satellites with synchronized orbits which allow user terminals located at fixed points to have fixed fields of view. Typically, these fields of view require only a single degree of steering freedom and can be defined by a one-dimensional angle such as elevation.

> Constellations can be distinguished, for example, by the number of satellites and/or the altitude at which the satellites are positioned. In a zero-drift orbit, a satellite completes a specific number of revolutions in a particular amount of time. In this case, a satellite's altitude is determined by the number of revolutions it makes within a particular amount of time. For example, a satellite's altitude can be restricted to be below the first Van Allen radiation belt. In addition, a satellite's altitude can be determined by the size of a satellite's antenna footprint and the number of satellites in a constellation.
>
> In a preferred embodiment of the invention, satellite communications system 100 comprises a plurality of LEO satellites in a zero-drift constellation. In this case, each satellite is in a resonant zero-drift circular orbit which repeats after a specific number of revolutions of the earth. This means that each satellite in the constellation traces out a substantially repeating ground track after this specific number of revolutions. (col. 2, line 29 - col. 3, lines 22)

and

> Low Earth Orbit (LEO) constellations have certain advantages over higher orbit constellations due to their closer proximity to the earth. For example, using the same optical aperture a LEO satellite can provide higher resolution images of the earth than a satellite in a Medium Earth Orbit (MEO) or a Geostationary (GEO) orbit. Equivalently, a LEO satellite can provide a communications link to a ground terminal using lower transmit power and/or a smaller antenna due to its range advantage over a MEO or GEO satellite. This proximity to earth also results in lower launch costs as well. (col. 1, lines 13-23)

The foregoing provides a generalized description of satellite constellation architectures. It discloses that the constellation may include geostationary satellites, non-geostationary satellites, or a combination of both. It also discloses that satellite constellations can be in inclined orbits.

It does *not*, however disclose the satellite constellation recited in claim 1. That is, *a plurality of satellites, each satellite in an inclined, elliptical, geosynchronous orbit, each satellite providing a portion of time of the at least near continuous broadcast service to the terrestrial receiver, wherein the plurality of satellites augments at least one legacy satellite in a geostationary orbit.*

Two disconnected statements (e.g. that a satellite constellation might have geosynchronous orbits, and that a satellite constellation might have satellites in inclined orbits) does not disclose, explicitly or inherently, a constellation of satellites in geosynchronous and inclined orbits.

The flaw in the Final Office Action's reasoning is self-evident from the Torkington reference itself. Consider the following two paragraphs:

> Constellations have been proposed which use a variety of different orbital parameters. A "satellite" is defined herein to mean a man-made object or vehicle intended to orbit the earth, and the term can include both geostationary and non-geostationary satellites. A "constellation" is defined herein to mean an ensemble of satellites arranged in orbits for providing specified coverage of a portion or of all portions of the earth. **A constellation typically includes multiple rings (or planes) of satellites, and it can have equal numbers of satellites in each plane, although this is not essential. A constellation could include geostationary or non-geostationary satellites, or a combination of both.**
>
> As is well known by those skilled in the art, orbital parameters are used to describe a satellite's orbit and a constellation's configuration. **The inclination (i) is a constant defining the angle at which the orbital plane intersects the equator.** In addition, the Right Ascension of the Ascending Node (RAAN) defines an angle between a non-rotating celestial reference and the line of nodes. The line of nodes is defined by a line formed using the intersection of an orbital plane and the plane of the equator. The line of nodes provides an orbit orientation. (col. 2, lines 28-50)

Using the Office Action's reasoning, Torkington discloses a constellation of geostationary satellites in an inclined orbit because the first (geostationary satellites) is mentioned in the first paragraph, and the second (inclined orbits) in the second paragraph. This is clearly false as satellites in a geostationary constellation cannot be in an inclined orbit.

Torkington is a reference that begins with a description of the general characteristics of satellite constellations, and ends by teaching a LEO constellation of satellites. It does not teach *a plurality of satellites, each satellite in an* ***inclined, elliptical, geosynchronous*** *orbit, each satellite providing a portion of time of the at least near continuous broadcast service to the terrestrial receiver*, nor does it teach that such a plurality of satellites ***augments*** *at least one legacy satellite in a* ***geostationary*** *orbit.*

Claims 16 and 24 recites features similar to those of claim 1 and is patentable for the same reasons.

<u>With Respect to Claim 9</u>: Claim 9 recites

> *A receiver station for receiving at least near continuous broadcast service from a plurality of satellites in an inclined, elliptical, geosynchronous orbit, comprising:*
>
> *an antenna having a sensitivity characteristic substantially corresponding to the track of the apparent position of each of the satellites.*

As described above, Torkington fails to disclose *a plurality of satellites in an inclined, elliptical, geosynchronous orbit*, and hence, fails to disclose a receiver station for receiving near continuous broadcast service from such a constellation.

Torkington likewise fails to disclose a receiver station having an antenna that has a sensitivity characteristic substantially corresponding to the track of the apparent position of each of the satellites. The Final Office Action argues:

> Re claim 9: Applicant argues that the Torkington does not teach the claimed invention "an antenna having a sensitivity characteristic". However, The Examiner respectfully disagrees with Applicant's assertion that the Torkington does not teach the claimed invention. Contrary to Applicant's assertion, the Examiner is of the opinion that Torkington teaches a receiver has a controllable antenna (steering antenna) to track point in correct direction and from at least one antenna beam with the desired characteristics (see column 6, lines 11 - column 7, lines 30 and Fig. 6), regarding the claimed limitation. More specifically, the claimed limitation "a sensitivity characteristic" can interprets tracking point in correct direction and from at least one antenna beam with the desired characteristics since the limitation is not limit/require for any special function or description in the claim.

The Applicant does not understand the statement "can interprets tracking point in correct direction and from at least one antenna beam with the desired characteristics." Presuming this means that the antenna's "sensitivity characteristic" includes the "direction" that a steerable antenna can be steered, the Applicant respectfully disagrees. No one of ordinary skill in the art would define a "sensitivity characteristic" to include steering as the Final Office Action has. Under that definition, *every* antenna has a 360 degree sensitivity characteristic because it can be picked up and pointed in any direction.

Of course, Office personnel are to "give claims their broadest reasonable interpretation in light of the supporting disclosure." *In re Morris*, 127 F.3d 1048, 1054-55, 14 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). However, the claims must be interpreted "in view of the specification" without importing limitations from the specification into the claims unnecessarily. *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969).

But here, the meaning of the term "sensitivity characteristic" is at issue. This is not a matter of reading limitations from the specification into the claims. The Office Action's interpretation of "sensitivity characteristic" is contrary to the Applicant's specification, a result that is not permitted under the law.

With Respect to Claim 45: Claim 45 recites:

A satellite system comprising:
at least one satellite in a geostationary orbit;
a plurality of satellites, each in an inclined, elliptical geosynchronous orbit;
a receiver station antenna that can communicate with said at least one satellite and at least one of said plurality of satellites during an active period without tracking, and
a gateway having a tracking antenna to track said plurality of satellites.

As a threshold matter, Torkington does not disclose a satellite system comprising at least one satellite in a geostationary orbit and a plurality of satellites, each in an inclined, elliptical geosynchronous orbit (see claim 1 above).

The Applicant has also pointed out that Torkington does not disclose a receiver antenna that can communicate with at least one satellite of a plurality of satellites in an inclined elliptical geosynchronous orbit during an active period without tracking and a gateway antenna having a tracking antenna to track the plurality of satellites. Torkington, instead teaches a user antenna that must track the satellites, and therefore, teaches away from claim 45.

The Final Office Action responds as follows:

> Re claim 45: The Examiner respectfully disagrees with Applicant's assertion that the Torkington does not teach the claimed invention "a receiver antenna can communicate with one satellite during an active period without tracking". Contrary to Applicant's assertion, the Examiner is of the opinion that Torkington teaches a receiver antenna communicates with at least one satellite during a moving period without tracking because receiver's controllable antenna tracking is only required to have one degree of freedom as the link can be handed off at the appropriate times (see column 6, lines 66 -column 7, lines 59 and Fig. 1, 6), regarding the claimed limitation.

> FIG. 6 shows a simplified block diagram of a user terminal in accordance with a preferred embodiment of the invention. User terminal 110 comprises at least one antenna subsystem 610, at least one transceiver 620 which is coupled to antenna subsystem 610, at least one processor 630 which is coupled to transceiver 620, and at least one user interface 640 which is coupled to processor 630. Antenna subsystem 610 comprises at least one controllable antenna 650 and at least one controller 660 which is coupled to controllable antenna 650.

> Controllable antenna 650 is used to establish at least one link 115 (FIG. 1) with at least one satellite 120 (FIG. 1). Controllable antenna 650 (as illustrated) is coupled to transceiver 620. Controller 660 (as illustrated) is coupled to processor 630. Controller 660 implements the necessary control functions which cause controllable antenna 650 to point in the correct direction and form at least one antenna beam with the desired characteristics.

> In a preferred embodiment, RF signals are received and transmitted using controllable antenna 650. RF signals are transferred between controllable antenna 650 and transceiver 620. Although the signal path is illustrated as a single line, many interconnections are possible between controllable antenna 650 and transceiver 620.

Digital data signals are transferred between controller 660 and controllable antenna 650. In the receive mode, transceiver 620 converts RF signals received from controllable antenna 650 into digital data. In the transmit mode, transceiver 620 converts digital data obtained from processor 630 into RF signals. RF signals are sent to and received from controllable antenna 650 by transceiver 620. RF signals received by transceiver 620 are converted to digital data which is sent to processor 630 to be further processed.

In a preferred embodiment, processor 630 controls the formation of links 115 (FIG. 1) by, among other things, determining link setup, determining when each satellite will be within the user terminal's FOV, and calculating at least one pointing angle for controllable antenna 650. In addition, processor 630 sends control information to controller 660 so that links can be established at the appropriate times, and it sends control information to controller 660 so that links can be handed-off at the appropriate times. Control signals are transferred between controller 660 and processor 630.

In a preferred embodiment, controllable antenna 650 includes a set of relatively simple tracking elements which are controlled by controller 660. Because satellites in a zero-drift constellation follow a constant ground track, user terminal tracking is only required to have one degree of freedom. For example, a small dish antenna could be used along with a small motor drive that moves the small dish antenna along an arc that the satellites travel along.

In alternate embodiments, controllable antenna 650 includes elements (not shown in FIG. 6) preferably arranged in a two-dimensional array. However, other array configurations are suitable. In these alternate embodiments, controllable antenna 650 can comprise a plurality of array elements which are independently controlled to produce a desired phase relationship to steer one or more antenna beams in any direction over a one-dimensional angular field of view (i.e., one degree of steering freedom). In other alternate embodiments, multi-dimensional fields of view are used. (col. 6, line 66 - col. 7 line 59)

If the Applicant correctly understands the Final Office Action's argument, Torkington teaches "without tracking" because it teaches tracking in only one direction. The Applicant simply cannot agree. Tracking in one direction instead of two is still "tracking".

C. Claims 7, 22, and 31 are patentable under 35 U.S.C. § 103(a) over Torkington, in view of Briskman

<u>With Regard to Claims 7, 22, and 31</u>: Claim 7 recites:

A system for providing at least near continuous broadcast service to a terrestrial receiver, comprising: a plurality of satellites, each satellite in an inclined, elliptical, geosynchronous orbit, each satellite providing a portion of time of the at least near continuous broadcast service to the terrestrial receiver, wherein the orbit is characterized by an orbital inclination approximately equal to 50 degrees and an eccentricity approximately equal to 0.13.

According to the First Office Action, Torkington does not disclose "an orbital inclination approximately equal to 50 degrees and eccentricity approximately equal to 0.13", but asserts that Briskman teaches these parameters by teaching a choice of an inclination between 40 degrees and

80 degrees and an eccentricity range from 0.15 to 0.30. The Office Action also asserts that the motivation to modify the Torkington reference would be to improve the satellite pattern for continuous broadcasting service and optimizing coverage of particular service area in a direct broadcast system.

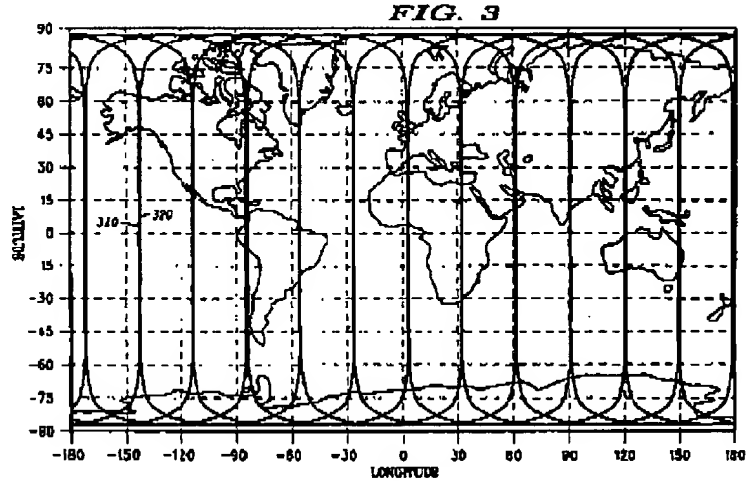
The Applicant disagreed for several reasons.

First, even if there were a teaching to modify Torkington as taught by Briskman, Briskman itself teaches only a very broad range of satellite constellation parameters (40-80 degrees and 0.15-0.30). This general statement is far too broad to suggest the Applicant's invention.

Second, Torkington cannot be modified as suggested in Briskman. Torkington includes user terminals that can track the LEO satellites. One of the advantages of the Torkington reference is that the user terminal antenna need only be steerable in one direction. This is apparent from FIG. 3 and the text below:

> The invention is particularly applicable to satellite communications systems which use low cost user terminals with simple tracking capabilities. The invention provides satellites with synchronized orbits which allow user terminals located at fixed points to have fixed fields of view. Typically, these fields of view require only a single degree of steering freedom and can be defined by a one-dimensional angle such as elevation. (col. 3, lines 4-11)

FIG. 3



Torkington functions by allowing the user terminal to track a satellite as it approaches (e.g. from the top of the tracks shown in FIG. 3 to the bottom), and when a second satellite appears along the same track going in an opposite direction, tracking the second satellite (see Abstract). This

requires that the satellites have an orbital inclination of very nearly 90 degrees (see col. 4, lines 46-58). Larger inclinations will not permit a user antenna with the above characteristics (steerable only in one direction) to switch tracking to the second satellite. Accordingly, Torkington teaches away from the modification suggested in the Office Action. In fact, Torkington would not operate properly if such a modification were made. "If when combined, the references 'would produce a seemingly inoperative device,' then they teach away from their combination." *In re Gurley*, 27 F.3d 551, 553, 31 U.S.P.Q.2d 1130 (Fed. Cir. 1994) (quoting *In re Sponnoble*, 405 F.2d 578, 587, 160 U.S.P.Q. 237, 244 (C.C.P.A. 1969).

The Final Office Action answers only the first of the Applicants' arguments, and does so as follows:

> Briskman teaches the eccentricity range in the preferred embodiments is from about 0.15 and about 0.30, and Eccentricities between about 0.15 and about 0.28, and inclination of the satellites is generally chosen to be about 40 degree and about 80 degree so they can cover the desired high latitude service areas during their transit overhead (column 2, lines 5 - 20 and Fig. 1), regarding the claimed limitation. More specifically, the limitation "approximately equal to 50 degrees" is not equal to 59 degree, could be 60 degree or 70 degree."

The Applicant respectfully disagrees that Briskman's broad statement of range teaches the Applicant's invention, but even if it did, there is no teaching to modify Torkington as shown in Briskman.

Claims 22 and 31 recite analogous features and are patentable for the same reasons.

D. Claims 10, 11, and 50-52 are patentable under 35 U.S.C. § 103(a) over Torkington, in view of Anderson.

With Respect to Claim 50: The Office Action indicates that the Applicant is required to submit an affidavit to overcome the previous rejection. This is incorrect. MPEP 706.02(I)(2) states:

> The statement concerning common ownership should be clear and conspicuous (e.g., on a separate piece of paper or in a separately labeled section) in order to ensure that the examiner quickly notices the statement. Applicants may, but are not required to, submit further evidence, such as assignment records, affidavits or declarations by the common owner, or court decisions, *in addition to* the above-mentioned statement concerning common ownership.
>
> For example, an attorney or agent of record receives an Office action for Application X in which all the claims are rejected under 35 U.S.C. 103(a) using Patent A in view of Patent B wherein Patent A is only available as prior art under 35 U.S.C. 102(e), (f), and/or (g). In her response to the Office action, the attorney or agent of record for Application X states, in a clear and conspicuous manner, that:
>
> > "Application X and Patent A were, at the time the invention of Application X was made, owned by Company Z."
>
> This statement alone is sufficient evidence to disqualify Patent A from being used in a rejection under 35 U.S.C. 103(a) against the claims of Application X.

This is precisely what the Applicant has done. Nonetheless, to expedite prosecution, the Applicant hereby submits an affidavit indicating that the subject Application (Serial No. 09/702,218) and U.S. Patent 6,778,810 were, at the time the invention of Application Serial No. 09/702,218 to the Hughes Electronics Corporation.

VII. CONCLUSION

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited. Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicant's undersigned attorney.

Respectfully submitted,

Date: February 28, 2006

By: ______________________

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